

Title (en)  
ACTIVE GRILLE, SCALABLE DESIGN

Title (de)  
AKTIVGRILL MIT SKALIERBAREM DESIGN

Title (fr)  
CONCEPTION DE CALANDRE ACTIVE, ÉVOLUTIVE

Publication  
**EP 3488159 A4 20190717 (EN)**

Application  
**EP 17838910 A 20170811**

Priority  
• US 201662374375 P 20160812  
• IB 2017054926 W 20170811

Abstract (en)  
[origin: WO2018029655A1] An active grille shutter arrangement having an assembled modular frame with a plurality of primary frame pieces formed by extrusion. Each one of the plurality of primary frame pieces has a first end, a second end and at least one key slot extending between the first end and the second end. Each of the plurality of frame pieces also includes a hollow bore extending through the each one of the plurality of primary frame pieces forming an aperture at the first end and an aperture at the second end. When the modular frame is assembled there is an upper frame portion and lower frame portion, both formed from one of the plurality of primary frame pieces. The arrangement also includes a number of alternate frame and vane pieces that allow several different active grille shapes and configurations to be formed.

IPC 8 full level  
**F24F 13/15** (2006.01); **B60K 11/08** (2006.01); **F01P 7/10** (2006.01)

CPC (source: EP US)  
**B29C 45/006** (2013.01 - US); **B29C 48/0021** (2019.01 - US); **B29C 48/09** (2019.01 - US); **B60K 11/085** (2013.01 - EP US); **F24F 13/15** (2013.01 - EP US); **B29K 2023/12** (2013.01 - US); **B29K 2055/02** (2013.01 - US); **B29K 2077/00** (2013.01 - US); **B29K 2509/08** (2013.01 - US); **B29L 2031/3005** (2013.01 - US); **F01P 7/10** (2013.01 - EP US); **Y02T 10/88** (2013.01 - EP US)

Citation (search report)  
• [XA] WO 2014036432 A1 20140306 - MAGNA INT INC [CA], et al  
• [A] US 9162641 B2 20151020 - TOWNSON JAMES M [US], et al  
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• See references of WO 2018029655A1

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Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**WO 2018029655 A1 20180215**; CA 3030990 A1 20180215; CN 109564024 A 20190402; CN 109564024 B 20210326; EP 3488159 A1 20190529; EP 3488159 A4 20190717; EP 3488159 B1 20220427; US 10525819 B2 20200107; US 10766356 B2 20200908; US 11541744 B2 20230103; US 2019184813 A1 20190620; US 2020108711 A1 20200409; US 2020353812 A1 20201112

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**IB 2017054926 W 20170811**; CA 3030990 A 20170811; CN 201780049346 A 20170811; EP 17838910 A 20170811; US 201716322324 A 20170811; US 201916704969 A 20191205; US 202016943233 A 20200730